of the constitutionality of the Harrison Narcotic Act again comes before the court, while constituted as at present, the decision will be against its constitutionality.

Yours truly,

W. C. WOODWARD, Executive Secretary,
Bureau of Legal Medicine and Legislation.

VALUE OF THE TREATMENT OF ARSPHENAMINE REACTIONS AND METALLIC POISONING BY THIOSULPHATE AND HYPOSULPHITE

During the past two years sodium thiosulphate has gained some favor in the treatment of the reactions, especially the dermatitis, from arsphenamine and as an antidote in poisoning from lead, mercury and arsenic. The benefits have been generally ascribed to some chemical action of the thiosulphate which is assumed to render these agents less toxic. There is no doubt that thiosulphate can reduce mercuric chloride in the test tube to the relatively insoluble and less active calomel. However, next to nothing is known of the possible reactivity with mercury circulating in the body, and for that matter also with other metallic salts and arsphenamine. Unfortunately, the form in which metallic compounds exist in the body is not known. The subject would seem, therefore, difficult of investigation from the chemical viewpoint. Speculation on the basis of unknown or doubtful chemical possibilities does not help in establishing the rationale of the thiosulphate treatment. However, attempts have been made from the pharmacological side to determine what, if any, basis for this treatment exists.

In their studies of the antagonism between thiosulphate and arsenical compounds, Kuhn and Loevenhart of the University of Wisconsin found that the intravenous injection of thiosulphate in rabbits had some protective action against the just lethal dose of sodium arsenite. The results, however, were not striking. The rate of urinary excretion of arsenic after arsenite by stomach and intravenously was markedly diminished. The amount excreted was greatly reduced despite considerable diuresis produced by the thiosulphate. Apparently there was retention of arsenic, a result that is exactly the opposite of that usually assumed. The thiosulphate reduced the therapeutic efficiency of tryparsamide in experimental trypanosomiasis in rats. Kuhn and Loevenhart concluded that the thiosulphate does not mobilize arsenic, but seems to cause its transformation into a less toxic, less therapeutically efficient and less easily excretable product. On the other hand, Harrison of London reports that Dale found a 2.5 per cent solution of thiosulphate to have no deleterious influence on the action of 914, an organic arsenical used in the treatment of trypanosomiasis.

In their study of patients with dermatitis and jaundice from neoarsphenamine and acute arsenic poisoning, Kuhn and Reese of the Wisconsin Psychiatric Institute and Edgewood Arsenal found that arsenic excretion was increased after the oral administration of 2 gm. thiosulphate in 120 to 150 cc. of physiological sodium chloride solution, and also after 10 cc. of a 5 per cent solution (0.5 gm.) intravenously in daily doses of about 1 gm. The increased excretion was suggested to be due in part to diuresis, but apparently there is a contradiction in the excretory results of Kuhn et al. from animals and patients. The human kidney seemed to be protected against the injurious action of arsenic.

The use of thiosulphate in the mercuric chloride poisoning of dogs has been studied recently by Haskell, Henderson and Hamilton of the Virginia Medical College with completely negative results. These authors point to the great variability in the fatal dose of sublimate for dogs, a factor that may be the source of considerable error in evaluating the benefits of the treatment. In spite of early and repeated intravenous administration of thiosulphate, the average duration of life of poisoned dogs remained the same as of the controls.

The results of Haskell et al are in partial agreement with those of Hesse of the University of Breslau, who has made an extensive investigation of mercuric chloride poisoning in dogs by various agents. The only agents found by Hesse to be effective in reducing mortality from fatal dosage of the sublimate were sodium phosphite and sodium hyosulphite ($Na_2S_2O_4$). Hyposulphite must not be confused with thiosulphate ($Na_2S_2O_3$). The hyposulphite was especially investigated. It was effective only when given by mouth and totally inert when given intravenously or hypodermically. The reason for its inertness intravenously was the reduction of the hyposulphite in the tissues, a chemical change that probably also occurs with the thiosulphate. When given by mouth the hyposulphite came in contact with the corrosive sublimate and reduced it to calomel together with the formation of demonstrable quantities of sulphur and sulphur dioxide, and in exactly the same way as the bichloride was reduced in the test tube. That is, the hyposulphite had to be brought in direct contact with the mercuric chloride in order to be effective as an antidote. The liberation of sulphur and sulphur dioxide also occurs in water and presumably in the tissues after hypodermic administration, and, therefore, the presence of these irritating products precludes its use hypodermically. Hesse claims that the hyposulphite itself is non-toxic, 0.2 gm. daily for a week being harmless. The dose recommended by mouth for man is 1 gm. daily administered in capsules containing 0.2 gm. hyposulphite and 0.2 gm. bicarbonate. The object of the bicarbonate is for neutralization of the gastric acidity which apparently decomposes the salt. Hesse estimates that from 1.3 to 1.4 gms. hyposulphite will completely reduce 1 gm. of mercuric chloride in a 1 per cent solution. The hyposulphite may cause vomiting, which, of course, would be beneficial in removing any unreduced sublimate. However, if it is desired to avoid vomiting this can be done by the administration of morphine, and then the hyposulphite is retained and acts more effectively on the sublimate. The hyposulphite was not tried by Hesse in poisoning from lead and arsenic.

Concerning the fate of thiosulphate and hyposulphite in the body, very little is known. Both appear to be reduced in the tissues in part, at least. According to Nyiri, from 30 to 40 per cent of thiosulphite given intravenously in dogs is destroyed,

about 50 per cent when given subcutaneously, and about 30 per cent when given orally. On the other hand, Hesse was unable to find any of these salts unchanged in the urine of rabbits, the hyposulphite being excreted as sulphate. If sulphur and sulphur dioxide are liberated from the hyposulphite in the blood and tissues, as occurs in vitro, it would seem that the drug should not be used intravenously.

The lack of definite knowledge regarding the fate and behavior of the thiosulphate and hyposulphite should enjoin caution in their promiscuous use intravenously in human subjects. A rational basis for their use in the treatment of metallic poisoning does not exist; the experimental evidences are contradictory and the clinical usage is empirical and uncontrolled. The occasional clinical benefits that are reported may be due merely to diuresis, an effect that may be secured equally well by sodium sulphate and other agents. Many other agents and measures have enjoyed temporary successes in the treatment of metallic poisonings. The facts are that confirmed cases of poisoning from the metals resist all kinds of treatment and antidotes, and that no one measure is to be relied upon to the exclusion of others. Unfortunately, it is frequently forgotten that mild cases, and sometimes even severe ones, recover spontaneously without treatment. The reports on the value of thiosulphate in dermatitis from arsphenamine appear to be more consistent, and further experience will, no doubt, determine its efficiency in this condition. It should not be forgotten that the use of thiosulphate in conjunction with arsphenamine may reduce the therapeutic efficiency of the latter. Physicians, of course, may use thiosulphate and hyposulphite by mouth practically with impunity, though without complete reliance on their antidotal value.

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HEALTH NEWS AND ETHICS

"Health News," through cupidity or ignorance of its sponsors, may be quite as injurious to public welfare as the practice of the healing art by the incompetent or unscrupulous. Indeed, without access to the public press by propagandists, the practice of quackery would be quickly reduced to an inconsequential minimum. Intelligent, honest publishers whose policies include public service as well as profits, recognize their great responsibility and provide for it through national organizations with codes of ethics comparable in purposes to the "code" to which educated physicians who are members of their county, state and national medical associations subscribe.

The revised ethics of the national organization of business pledges its members to a high moral code of conduct, in its purposes again not unlike the doctors' code. A growing number of publishers and merchants take their codes seriously and live up to their provisions, but there are still too many who disregard or openly repudiate their ethics.

In this respect publishers and merchants are not unlike doctors, whose code of ethics is the oldest in existence. It is based upon the oath of Hippocrates which in turn was devised from customs that go back to remotest antiquity. This, and all modern codes are amplifications of what we call the Golden Rule. Truth and honesty in advertising; honesty, integrity and fair dealing in business—charity, humanity, intelligent unselfishness in public and personal service. Ethics are standards of morals and manners made effective by moral force applied to those who voluntarily accept them.

Too many doctors, publishers and merchants wear their ethics only as a cloak useful in stormy weather, and even larger numbers refuse to subscribe to the ethics of their vocations and refuse, or are refused, membership in their own organizations, which have the power of discipline of their members in matters of vocational and moral conduct. Laws at their best are extensions of ethics and being universal and mandatory in their application are consequently always upon a much lower moral plane than are the ethics established by groups as expressions of their ideals and enforced by moral influence.

Few intelligent observers will question the statement that the press influences humanity en masse in health matters far more than do the doctors and other health agencies. The increasing number of publishers who are elevating their standards for health news and health advertising constitutes an encouraging sign of facilitated health progress.

THE BUDGET OF LIFE

The most valuable item in the budget of life is the earnings in new lives, which accrue at the rate of about 1½ per cent—roughly two million babies: the most significant expenses are deaths which occur at the rate of about 1 per cent—roughly 1,250,000 —annually.

Life in the United States, therefore, is still a "going concern" with its capital and its stockholders on the increase.

But this hopeful showing does not reflect the whole picture because stock in life carries with it assessment liabilities and pension or retirement privileges which must be considered before dividend rates may be established and reserves set up where moth and rust doth not corrupt nor thieves break in and steal.

Every new stockholder comes into life in debt. He has been brought in on borrowed capital and he keeps on borrowing for approximately a third of his life, the loan being secured by certain inheritances and a lot of love and faith.

During the middle third of the period of life's average of sixty years, the investor is permitted to hold his assets, he is expected to pay his debts in installments, produce other stockholders, accumulate savings, make the initial payments on their stock,